Central Valley Regional Water Quality Control Board
23/24 September 2010 Board Meeting

Response to Comments
for the
City of Davis
Wastewater Treatment Plant
Tentative Order Amending Waste Discharge Requirements & Time Schedule Order

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The following are Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff responses to comments submitted by interested parties regarding the tentative Order amending Waste Discharge Requirements (WDRs) (NPDES No. CA0079049) and Time Schedule Order (TSO) for the City of Davis (Discharger) Wastewater Treatment (Facility).

A tentative Order amending the NPDES permit and TSO were issued for public comment on 1 July 2010 with comments due by 2 August 2010. The Central Valley Water Board received public comments regarding the 2 August 2010 tentative Order amending the NPDES Permit and TSO by the deadline from the Discharger and the California Sportfishing Protection Alliance (CSPA).

Written comments on the 2 August 2010 tentative Orders are summarized below, followed by Central Valley Water Board staff responses.

CITY OF DAVIS (DISCHARGER) COMMENTS

Discharger Comment No. 1. Ammonia Effluent Limits

The Discharger comments that the proposed permit amendment inappropriately determines ammonia effluent limits based on the downstream receiving water pH and temperature for a discharge that does not receive dilution. The City contends that the changes in pH and temperature that occur downstream of the discharge are due to the ambient conditions, which may be influenced by factors that cannot be controlled or anticipated by the City.

> **RESPONSE:** Central Valley Water Board Staff does not concur. The City discharges ammonia to the receiving water, which is toxic to aquatic life. The toxicity of ammonia varies based on pH and temperature, as discussed in the proposed permit's Fact Sheet. The Discharger may not be able to control the downstream pH and temperature conditions, but the effluent ammonia concentrations can be controlled. Based on the new information provided by the Discharger, the conservative approach used in the permit to establish the ammonia effluent limitations is necessary to protect the beneficial uses of the receiving water.

Discharger Comment No. 2. Turbidity

The Discharger comments that the receiving water limitation for the lowest range of background turbidity in the proposed Order does not reflect the latest Basin Plan and

the amendments to the turbidity objectives adopted by Resolution R5-2007-0136 and approved by the EPA on July 2009.

RESPONSE: The proposed permit amendment reopens and amends the existing permit to address the permit revisions required in State Water Resources Control Board WQO 2008-0008 and addresses changes based on new information provided by the Discharger. There is no new information for turbidity provided by the Discharger; therefore, the Discharger's request is outside the scope of the tentative permit revision and cannot be considered.

Discharger Comment No. 3. Monitoring Requirements

The Discharger comments the proposed Priority Pollutant Metals Study for the receiving water described in Special Provision VI.C.2.h (p.30) and Attachment F (p. F-83) contains redundant monitoring provisions to current monitoring requirements in the permit, which could result in collection of additional and unnecessary data. The Discharger proposes to collect pH, EC, and hardness data in a manner that satisfies both requirements, and not collect pH or EC twice weekly due to overlapping requirements.

RESPONSE: The proposed permit amendment reopens and amends the existing permit to address the permit revisions required in WQO 2008-0008 and address changes based on new information provided by the Discharger. There is no new information provided by the Discharger; therefore, the Discharger's request is outside the scope of the tentative permit revision and cannot be considered.

Discharger Comment No. 4. Toxicity

The Discharger requests that the phrases "pattern of toxicity" or "pattern of effluent toxicity" not be edited to remove "pattern of" in the proposed permit.

RESPONSE: The USEPA has requested the Central Valley Water Board to remove "pattern of" from the phrase "pattern of toxicity" as this is subjective. The accelerated monitoring requirement clearly defines the term toxicity.

Discharger Comment No. 5. General Comments

A. The Discharger requests that the acute toxicity bioassay not be required in months when the chronic toxicity bioassay is performed (Sections IV.A.1.c and IV.A.2.d).

RESPONSE: Rainbow trout is the specified species in the Permit for use with the acute toxicity bioassay and cannot be used when performing the chronic toxicity bioassay, because the EPA method manual for performing the chronic toxicity testing requires fathead minnows in the three species test. Also, the Discharger is not allowed to comment on toxicity since the proposed permit amendment reopens and amends the existing permit to address the permit revisions required in WQO 2008-0008 and address changes based on new information provided by the Discharger. New information for acute or chronic toxicity bioassays was not provided by the Discharger and WQO 2008-0008 specifies that the permit be amended to include a narrative effluent limitation for chronic toxicity; therefore, the Discharger's request is outside the scope of the proposed permit revision and cannot be considered.

B. The Discharger requests that the monthly mass discharge limit for mercury (Sections IV.A.1.d and IV.A.2.d) be replaced with the calculated calendar year average (p. E-16).

RESPONSE: The Discharger is not allowed to comment on mercury since the proposed permit amendment reopens and amends the existing permit to address the permit revisions required in WQO 2008-0008 and address changes based on new information provided by the Discharger. There is no new information for mercury provided by the Discharger; therefore, the Discharger's request is outside the scope of the proposed permit revision and cannot be considered.

Discharger Comment No. 6. Clarifications

A. The Discharger requests a revision to the average mercury monthly calculation procedure to describe the median value methods for Attachment E, Section IX.A.6 (p. E-15).

RESPONSE: See response to Discharger's Comment No. 5B.

B. The Discharger requests that "in Table E-3" be inserted into section Attachment E, Section IV, page E-3 to read as follows: "…for all of the constituents listed <u>in Table E-3</u>, below,…"

RESPONSE: Central Valley Water Board Staff does not concur. The effluent monitoring is required for all applicable effluent monitoring requirements in Section IV, which includes Tables E-3, E-4, and E-5. The existing language should not be changed.

Discharger Comment No. 7. Other Corrections

The Discharger requests that incorrect references in Attachment E, Sections IX.B.3.c and f, pages E-16 and E-17 for Mercury (3.c) should refer to Section VII.C on page 38 and Coliform (3.f) should refer to Section VII.F on page 39.

The Discharger requests that in Attachment F, page 1 Jim Beatty's name and information be removed.

RESPONSE: Corrections noted and the proposed permit Amendment have been made to reflect the correction to the typographical error and update of authorized person to sign and submit reports.

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS

CSPA Comment No. 1. Mixing Zone

CSPA comments that the proposed Permit Amendment allows for a defacto mixing zone absent any mixing zone analysis to an ephemeral stream contrary to the mixing zone requirements contained in the Basin Plan and the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) for temperature and turbidity. The proposed permit has been modified to state that compliance with the receiving water limitations for temperature and turbidity will be based on the differences between upstream and downstream receiving water sampling locations.

RESPONSE: Central Valley Water Board staff does not concur. The receiving water limitations in question are to limit changes to temperature and turbidity in the receiving water caused by the discharge (e.g., for temperature, the permit requires that the discharge shall not cause, "The natural temperature to be increased by more than 5°F."). The proposed permit amendment simply clarifies how compliance will be determined for the changes in temperature and turbidity from the upstream receiving water conditions. This in no way allows a mixing zone, which are used to establish water quality-based effluent limitations.

CSPA Comment No. 2. Receiving Water Limitations

CSPA comments that compliance points for receiving water limitations for temperature and turbidity have been modified in the proposed Permit that were not subject of the State Board's remand back to the Regional Board and are included contrary to the Federal Requirements in federal regulation 40 CFR 122.62(a) which specifies cases for modification of an NPDES permit.

RESPONSE: The clarifications made to the temperature and turbidity receiving water limitations are minor modifications that simply clarify how compliance is determined for the receiving water limits. No change to the receiving water limitations have been made. .

CSPA Comment No. 3. Metals Translators

CSPA comments that the proposed Permit amendment utilizes metals translators that result in discharge limitations that are not protective of the aquatic life beneficial uses of the receiving stream and does not utilize the applicable numeric water quality standard or criteria contrary to federal regulation 40 CFR 122.44(d). CSPA contends that the metal translator study performed by the Discharger may not have been conducted in the receiving stream during critical conditions.

RESPONSE: Central Valley Water Board Staff does not concur. As described in section IV.C.2.b of the Fact Sheet (Attachment F), the metals translators for copper, lead, and nickel were based on the findings the Discharger's January 2007, "Metals Translator Monitoring Study-Copper, Lead, and Nickel" (Study). The Discharger's study followed USEPA's *The Metals Translator Report: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA 823-B-96-007) to develop translators for copper, lead, and nickel. The Discharger's Study developed translators based on the effluent only and based on an effluent/receiving water mixture. The Discharger's Study demonstrated that the dissolved fractions in the effluent are greater than in the downstream mixed receiving water. A mixing zone has not been allowed in the permit. Therefore, site-specific translators based on the mixed downstream receiving water monitoring data were considered to not be appropriate and were not used. Instead, the site-specific translators based on the effluent data were used for development of end-of-pipe water quality-based effluent limits. Therefore, CSPA's contention that the critical receiving water conditions were not considered in the Discharger's study is irrelevant.

CSPA Comment No. 4. Effluent Limitations for Copper

CSPA comments that the proposed Permit amendment fails to utilize EPA recommended criteria for copper and instead utilizes an outdated water quality standard and water effects ratio in developing and effluent limitation for copper contrary to

Section 122.44(d) of 40 CFR which requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

RESPONSE: Central Valley Water Board Staff does not concur. CSPA provides a discussion of the Biotic Ligand Model (BLM), which is a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria. However, to use the BLM, a Basin Plan amendment allowing adjustment of an established criteria must be completed or USEPA must modify the CTR. CSPA also provides a discussion of the biological opinion from the US Fish and Wildlife Service and National Marine Fisheries Service on the promulgation of the CTR. Because the biological opinion was submitted on the proposed CTR rulemaking, USEPA would have considered the specific comment in the development of the final rulemaking of the CTR. Therefore, these comments by CSPA are directed at the CTR, not the proposed permit amendment, which must comply with the final CTR. Central Valley Water Board Staff properly applied the CTR when establishing WQBELs for the CTR metals with hardness-dependant criteria.

CSPA Comment No. 5. The proposed Permit misquotes and misapplies a technical report in developing hardness based effluent limitations for metals; therefore, the effluent limitations developed utilizing this procedure are not protective of water quality and the beneficial uses of the receiving stream as required by 40 CFR 122.44.

RESPONSE: Central Valley Water Board Staff does not concur. The proposed permit amendment cites a technical report that was used in development of the water quality-based effluent limitations for CTR metals with hardness-dependent criteria[1]. Based on CSPA's comment it appears they understand that the methodologies in the report should not be used in situations when the effluent may make up to 100% of the stream flow. CSPA appears to misunderstand and actually misquotes the report. The report states the following on page 2, "Unless otherwise stated, the equations presented herein were developed for occasional effluent dominated conditions (i.e., an effluent discharge can constitute up to 100 percent of the stream flow at times) and no use of environmental assimilative capacity (i.e., receiving water contaminant concentrations at water quality objectives prior to discharge of effluent)." (Emphasis added)

The quote cited by CSPA on page 11 of the Report states that, "In situations where maximum receiving water contaminant concentrations are less than water quality objectives or if effluent will never make up 100 percent of the stream flow, these same methodologies can be modified easily to set protective, fixed effluent

[1] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.

limitations…" To quote the Report correctly, this means that for situations were effluent dominated conditions do not occur, the methodologies presented in the Report can be modified. CSPA appears to misinterpret the statement as meaning the methodologies cannot be used when effluent dominated conditions occur.

CSPA also contends that methodologies presented in the Report should not be used due to insufficient background hardness and metals data. CSPA claims there is insufficient data to determine if the assumptions in the Report have been met, specifically that the receiving water metals concentrations do not exceed criteria. Central Valley Water Board Staff does not concur. Based on the available data it was demonstrated that the conditions of the Report have been satisfied. Additional monitoring has been required in the proposed permit to increase the dataset for a more robust evaluation. The fact that additional data has been requested is not evidence that sufficient information was available to develop adequately protective effluent limitations.

CSPA Comment No. 6. Effluent Limitations for Metals Based on Hardness

CSPA comments that the proposed Permit Amendment establishes effluent limitations for metals based on the hardness of the effluent as opposed to the ambient upstream receiving water hardness as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)).

RESPONSE: As explained in detail in IV.C.2.c of the Fact Sheet (Attachment F), the reasonable worst-case ambient hardness was used to calculate the CTR hardness-dependant metals criteria. The downstream ambient hardness is appropriate and allowed by the SIP and CTR.

The criteria for hardness-dependant metals must be based on the reasonable worst-case ambient hardness in accordance with the SIP[2], the CTR[3], and State Water Board Order NO. WQO-2008-0008 (Davis Order). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4), Table 4, note 4). The CTR does not define whether the term "ambient", as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, the State Water Board concluded that where reliable, representative data are available, the

[2] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependant metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

[3] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with design discharge conditions for design flows and mixing zones.

hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Davis Order, p. 11).

In the Davis Order, the State Water Board points out that the requirements for selecting the appropriate hardness for calculating the CTR metals criteria is conflicting in the CTR and the SIP. The CTR requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones (e.g., 1Q10 and 7Q10 receiving water low flows); whereas, the SIP's steady-state methods requires the selection of critical or worst-case parameters. These can be in conflict for hardness, because often in receiving waters the critical worst-case hardness conditions do not coincide with the design low flow conditions. The lowest hardness conditions typically occur during high river flows, due to the low hardness in surface runoff from precipitation or snowmelt[4]. The State Water Board concludes that, *"Thus, the regional water boards have considerable discretion in selection of hardness. Regardless of which method is used for determining hardness, the selection must be protective of water quality criteria, given the flow conditions under which the particular hardness exists."* (*Id.,* p. 10).

In the proposed NPDES permit amendment, the reasonable worst-case estimated downstream hardness was used for calculating the CTR criteria. As shown in Tables F-6 through F-8 in the Fact Sheet (Attachment F), the calculated CTR are protective under all discharge and flow conditions assuming worst-case conditions for upstream ambient hardness and metals concentrations.

CSPA quotes the CTR with regards to a concern when an effluent raises the hardness of the receiving water. It states, *"A hardness equation is most accurate when the relationship between hardness and the other important inorganic constituents, notably alkalinity and pH, are nearly identical in all of the dilution waters used in the toxicity tests and in the surface water to which the equation is to be applied. If an effluent raises hardness but not alkalinity and/or pH, using the lower hardness of the downstream hardness might provide a lower level of protection than intended by the 1985 guidelines."* (Federal Register, Volume 65, No. 97/Thursday, May 18th, 2000 (31692)) CSPA asserts this means that the upstream receiving water hardness must be used in the CTR equations. Effluents from municipal wastewater treatment plants have similar characteristics to the receiving water with regard to relationships between, hardness, alkalinity, and pH. Municipal wastewater treatment plants must maintain neutral pH and sufficient alkalinity for the biological process to work properly, especially for nitrification. Therefore, the condition that the CTR warns against is not present in municipal wastewater treatment plant effluent. This language in the CTR confirms that "ambient" may be defines as downstream of the discharge after

[4] This has been documented for the San Joaquin River near the Manteca discharge. The lowest receiving water hardness occurs during flood flows when there is massive dilution.

mixing with the effluent, thus, the use of downstream mixed hardness is appropriate under these conditions as the State Water Board found in the Davis Order.

CSPA takes the State Water Board's quotes out of context in the Davis Order (WQO 2008-0008). For the City of Davis NPDES permit, the upstream receiving water hardness was used. However, in the City of Davis NPDES permit, the use of the lowest hardness during low flows was used, rather than the lowest hardness during all flow conditions. The State Water Board found that in order to account for acute conditions that may occur even during high flows, the Central Valley Water Board must consider the hardness of the receiving water during all flow conditions, high and low. CSPA takes this state as a requirement to only use the upstream receiving water hardness. However, the State Water Board actually concluded that where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Davis Order, p. 11).

CSPA further provides a discussion of the biological opinion from the US Fish and Wildlife Service and National Marine Fisheries Service on the promulgation of the CTR. Because the biological opinion was submitted on the proposed CTR rulemaking, USEPA would have considered the specific comment in the development of the final rulemaking of the CTR. Therefore, these comments by CSPA are directed at the CTR, not the proposed permit amendment, which must comply with the final CTR and SIP. Central Valley Water Board Staff properly applied the SIP and CTR when establishing WQBELs for the CTR metals with hardness-dependant criteria.

CSPA Comment No. 7. Effluent Limitations for Chronic Toxicity

CSPA comments that the proposed Permit Amendment contains no effluent limitation for chronic toxicity and therefore does not comply with the Basin Plan, Federal Regulations 40 CFR 122.44(d)(1)(i) and the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).

RESPONSE: Central Valley Water Board Staff does not concur. The effluent limitation, special provision, and compliance determination requirement for chronic whole effluent toxicity (WET) are in accordance with State Water Board WQO 2003-0012 (Los Coyotes and Long Beach) and WQO 2008-0008 (City of Davis). In these water quality orders, the State Water Board requires the following when a discharge has reasonable potential to cause or contribute to an exceedance of the narrative toxicity objective based on chronic WET testing:

a. A chronic WET narrative limit;
b. Chronic WET numeric benchmarks for triggering accelerated monitoring; and

c. Rigorous toxicity reduction evaluation/toxicity identification evaluation conditions.

The proposed Permit amendment contains these requirements and fully complies with the State Water Board's water quality orders.

CSPA Comment No. 8. Effluent Limitations for Electrical Conductivity (EC)

CSPA comments that the proposed Permit Amendment contains no effluent limitation for EC in violation of Federal Regulations 40 CFR 122.44.

RESPONSE: The proposed permit amendment reopens and amends the existing permit to address the permit revisions required in State Water Board Order WQ 2008-0008 (City of Davis) and address changes based on new information provided by the Discharger. No changes are proposed regarding the reasonable potential analysis or effluent limitations for EC. Therefore, this comment is not within the scope of this hearing.

State Water Board Order WQ 2008-0008, concluded that the EC interim effluent limitation was appropriate, but remanded the permit to the Central Valley Water Board to allow the Discharger use the results from the City of Woodland's EC site-specific study, in lieu of conducting a new study. The study provision in the permit has been modified to make this change.

CSPA Comment No. 9. Antidegradation

CSPA comments that the proposed Permit Amendment contains no antidegradation analysis and does not comply with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247. Specifically, the proposed Permit Amendment would significantly relax effluent limitations for ammonia and copper and does not contain any discussion of the proposed relaxation of limitations with regard to the Antidegradation Policy or Federal antidegradation regulation.

RESPONSE: Central Valley Water Board Staff does not concur. Water Codes Section 13146 and 13247 require other state agencies to comply with water quality control plans when those agencies are discharging waste. Although these sections are not relevant here, Central Valley Water Board Staff concurs that the Central Valley Water Board must comply with state and federal antidegradation policies when issuing NPDES permits. However, the Permit complies with those policies.

Order R5-2007-0132-01 contains instantaneous minimum and maximum pH effluent limitations of 6.5 and 8.5, respectively, based on the Basin Plan objectives for pH. The Discharger is upgrading the Facility to tertiary and year-

round nitrification/denitrification and has requested a more stringent instantaneous maximum pH of 8.0 to allow less stringent ammonia limits, which are based on pH-dependent ammonia criteria. The Discharger's proposed facility upgrades include more conventional treatment methods that will allow more consistent control for pH. Therefore, it is reasonable to require the more stringent instantaneous maximum pH limit of 8.0 and allow corresponding less stringent ammonia effluent limits. This allows the Discharger to design treatment facilities for ammonia removal based on the expected effluent quality of more conventional treatment systems typically used for nitrification/denitrification (e.g., activated sludge). The new proposed limits are representative of current performance and are still significantly more stringent than needed to protect the beneficial uses of the receiving water. Impacts to water quality due to the proposed changes will be insignificant and allow a less-stringent ammonia limitation is to the benefit of the people of the State.

In regards to copper, the existing Permit contains no final effluent limitations for both Discharge 001 and Discharge 002. The proposed permit amendment adds a new water quality-based effluent limitation for copper to Discharge 002.

The proposed revisions to the ammonia and copper are based on new information that was not available at the time of adoption of the current permit, as discussed in detail in the Fact Sheet. Revising the ammonia limitation to a more-lenient limitation with new information that was not available at the time the permit was adopted, is in accordance with anti-backsliding requirements.

CSPA Comment No. 10. Effluent Limitations for Ammonia

CSPA comments that the proposed Permit Amendment (1) modified effluent limitations for ammonia that were not the subject of WQO 2008-0008 and included contrary to the Federal Requirements on federal regulation 40 CFR 122.62(a) which specifies cases for modification of an NPDES permit and (2) does not contain an effluent limitation for ammonia in violation of Federal Regulations 40 CFR 122.44.

RESPONSE: Central Valley Water Board Staff does not concur. The existing permit contains final water quality-based effluent limitations for ammonia, which are based on the existing effluent quality at the time the existing permit was renewed. The Facility cannot immediately comply with the final ammonia effluent limitations. Therefore, the existing Order includes a compliance schedule with compliance required by 25 October 2017. The Discharger is designing a complete reconstruction of the Facility to a more conventional treatment system that will provide ammonia removal. The new treatment plant is expected to result in more consistent effluent pH control with lower effluent pH. Since the discharge conditions for the design of the new facility are much different than the existing conditions, the Discharger requested that the final effluent limitations for ammonia be based on the projected effluent quality of the new, more conventional treatment facility. The recalculation of the final effluent limitations

for ammonia is based on the lower pH. The permit Fact Sheet discusses the recalculation procedures and the new information available in detail.

CSPA Comment No. 11. Antibacksliding

CSPA comments that the proposed Permit Amendment contains effluent limitations for ammonia and copper less stringent than the existing permit contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44.(l)(1).

RESPONSE: Central Valley Water Board Staff does not concur. For ammonia, the relaxation of the effluent limitations is based on the new design information that is described in the Permit Fact Sheet. The new information is regarding the further detail of the proposed new Facility that was not available at the time the current permit was adopted, and is consistent with the anti-backsliding requirements of the Clean Water Act and federal regulations. See response to CSPA Comments #9 and #10.

In regards to copper there is no backsliding issue. The existing Permit contains no final effluent limitations for both Discharge 001 and Discharge 002. The proposed permit amendment adds a new water quality-based effluent limitation for copper to Discharge 002.